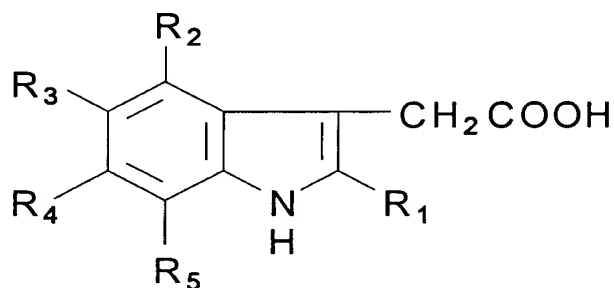


We claim:

1. A method for generation of callus, shoots, or roots from a plant cell or tissue which comprises the step of contacting said plant cell or plant tissue with an amount of an auxinic compound effective for generation of callus, shoots or roots and having the formula:



or salts, esters or amides thereof, wherein R_1 - R_5 are independently selected from the group consisting of a hydrogen, a halogen, an alkyl-group, an alkoxy-group, an acyl-group, an acyloxy-group, and an acylamido-group, but excluding indole-3-acetic acid and 5-bromoindole-3-acetic acid.

2. The method of claim 1 wherein said alkyl-group, said alkoxy-group, said acyl-group, said acyloxy-group and said acylamido-group have 1-10 carbon atoms.

3. The method of claim 1 wherein said auxinic compound is a monosubstituted indole-3-acetic acid or salt, ester or amide thereof.

4. The method of claim 3 wherein in said auxinic compound one of R_1 - R_5 is a bromine, a fluorine or an iodine.

5. The method of claim 3 wherein in said auxinic compound one of R_1-R_5 is a chlorine.
6. The method of claim 1 wherein said auxinic compound is a disubstituted indole-3-acetic acid.
7. The method of claim 6 wherein in said auxinic compound at least one of R_1-R_5 is a bromine, or a fluorine.
8. The method of claim 6 wherein in said auxinic compound at least one of R_1-R_5 is a chlorine.

9. The method of claim 1 wherein said auxinic compound is 2-fluoroindole-3-acetic acid, 4-fluoroindole-3-acetic acid, 6-fluoroindole-3-acetic acid, 7-fluoroindole-3-acetic acid, 2-bromoindole-3-acetic acid, 4-bromoindole-3-acetic acid, 6-bromoindole-3-acetic acid, 7-bromoindole-3-acetic acid, 2-iodoindole-3-acetic acid, 4-iodoindole-3-acetic acid, 5-iodoindole-3-acetic acid, 6-iodoindole-3-acetic acid, 7-iodoindole-3-acetic acid or salts, esters or amides thereof.

10. The method of claim 1 wherein said auxinic compound is 2-fluoroindole-3-acetic acid, 4-fluoroindole-3-acetic acid, 6-fluoroindole-3-acetic acid, 7-fluoroindole-3-acetic acid or salts, esters or amides thereof.

11. The method of claim 1 wherein said auxinic compound is 6-fluoroindole-3-acetic acid, 7-fluoroindole-3-acetic acid or salts, esters or amides thereof.

12. The method of claim 1 wherein said auxinic compound is 2-bromoindole-3-acetic acid, 4-bromoindole-3-acetic acid, 6-bromoindole-3-acetic acid, 7-bromoindole-3-acetic acid or salts, esters or amides thereof.

13. The method of claim 1 wherein said auxinic compound is 4-bromoindole-3-acetic acid, 6-bromoindole-3-acetic acid, 7-bromoindole-3-acetic acid or salts, esters or amides thereof
14. The method of claim 1 wherein said auxinic compound is 6-bromoindole-3-acetic acid, 7-bromoindole-3-acetic acid or salts, esters or amides thereof .
15. The method of claim 1 wherein said auxinic compound is 2-iodoindole-3-acetic acid, 4-iodoindole-3-acetic acid, 5-iodoindole-3-acetic acid, 6-iodoindole-3-acetic acid, 7-iodoindole-3-acetic acid or salts, esters or amides thereof .
16. The method of claim 1 wherein in said auxinic compound one of R_1-R_5 is an alkyl-group and the remaining R_1-R_5 groups are hydrogens.
17. The method of claim 16 wherein in said auxinic compound one of R_1-R_5 is an alkyl-group having from one to four carbon atoms.
18. The method of claim 17 wherein one of said R_1-R_5 groups is an ethyl group.
19. The method of claim 18 wherein said auxinic compound is 7-ethylindole-3-acetic acid, 5-ethylindole-3-acetic acid, or salts, esters or amides thereof.
20. The method of claim 1 wherein in said auxinic compound one of R_1-R_5 is an alkoxy-group and the remaining R_1-R_5 groups are hydrogens.
21. The method of claim 20 wherein in said auxinic compound one of R_1-R_5 is an alkoxy-group having from one to four carbon atoms and the remaining R_1-R_5 groups are hydrogens.
22. The method of claim 21 wherein one of said R_1-R_5 groups is a methoxy group.

23. The method of claim 22 wherein said auxinic compound is 5-methoxyindole-3-acetic acid or salts, esters or amides thereof.

24. The method of claim 1 wherein said plant cell or plant tissue comprises foreign DNA.

25. The method of claim 24 wherein said auxinic compound is 5-fluoroindole-3-acetic acid, 7-fluoroindole-3-acetic acid, 7-bromoindole-3-acetic acid, 5-chloroindole-3-acetic acid, 5-ethylindole-3-acetic acid, 7-ethylindole-3-acetic acid or salts, esters or amides thereof.

26. The method of claim 1 wherein said plant cell or tissue is that of a hard-to-regenerate plant.

27. The method of claim 26 wherein said plant cell or tissue is that of a woody plant or a monocotyledonous plant.

28. The method of claim 26 wherein said plant cell or tissue is a cell or tissue of a cassava plant.

29. The method of claim 28 wherein in said auxinic compound R_3 or R_5 is a fluorine.

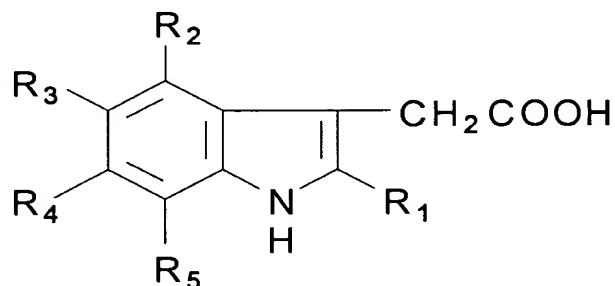
30. The method of claim 29 wherein said auxinic compound is 5-fluoro-3-acetic acid or salts, esters, or amides thereof.

31. The method of claim 1 for generation of roots from plant tissue.

32. The method of claim 31 wherein said auxinic compound is a monosubstituted indole-3-acetic acid or salt, ester or amide thereof.

33. A method for regeneration of a plant from a plant cell or plant tissue which comprises the steps of:

- (a) contacting said plant cell or plant tissue with an amount of an auxinic compound effective for regeneration of roots and
- (b) contacting said plant cell or plant tissue with a combination of said auxinic compound and a cytokinin in a combined amount effective for the regeneration of shoots from said plant cell or plant tissue wherein said auxinic compound has the formula:



or salts, esters and amides thereof, wherein R_1 - R_5 are independently selected from the group consisting of a hydrogen, a halogen, an alkyl-group, an alkoxy-group, an acyl-group, an acyloxy-group, and an acylamido-group, but excluding indole-3-acetic acid and 5-bromoindole-3-acetic acid.

34. The method of claim 33 wherein said alkyl-group, said alkoxy-group, said acyl-group, said acyloxy-group and said acylamino-group have 1-10 carbon atoms.
35. The method of claim 33 wherein in said auxinic compound at least one of R_1 - R_5 is a halogen.

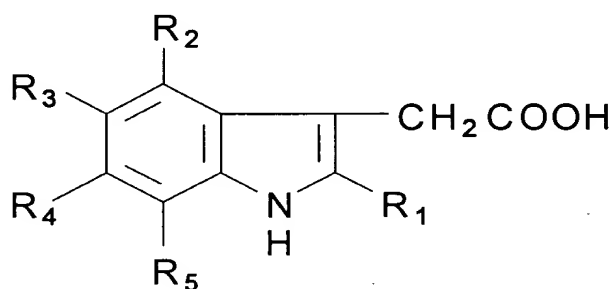
36. The method of claim 33 wherein said auxinic compound is 2-fluoroindole-3-acetic acid, 4-fluoroindole-3-acetic acid, 6-fluoroindole-3-acetic acid, 7-fluoroindole-3-acetic acid, 2-bromoindole-3-acetic acid, 4-bromoindole-3-acetic acid, 6-bromoindole-3-acetic acid, 7-bromoindole-3-acetic acid, 2-iodoindole-3-acetic acid, 4-iodoindole-3-acetic acid, 5-iodoindole-3-acetic acid, 6-iodoindole-3-acetic acid, or 7-iodoindole-3-acetic acid.

37. The method of claim 33 wherein in said auxinic compound at least one of R_1 - R_5 is an alkyl group.

38. The method of claim 33 wherein said plant cell or plant tissue comprises foreign DNA.

39. The method of claim 33 wherein said plant cell or tissue is of a plant selected from the group of hard to regenerate plants consisting of cassava, woody plants and monocotyledonous plants.

40. A composition for generation of callus, shoots or roots from a plant cell or tissue which comprises an amount of an auxinic compound effective for generating callus, shoots or roots and having the formula:



or salts, esters and amides thereof, wherein R_1 - R_5 are independently selected from the group consisting of a hydrogen, a halogen, an alkyl group, an alkoxy-group, an acyl-group, an acyloxy-group, and an acylamido-group, but excluding indole-3-acetic acid and 5-bromoindole-3-acetic acid.

- 5 41. The composition of claim 40 wherein said auxinic compound, said alkyl-group, said alkoxy-group, said acyl-group, said acyloxy-group and an acylamido-group have 1-10 carbon atoms.
42. The composition of claim 40 which is useful for the formation of roots from plant cells or tissue.
- 10 43. The composition of claim 40 which is useful for the formation of shoots from plant cells or tissue.
44. The composition of claim 40 wherein in said auxinic compound at least one of R_1 - R_5 is a halogen.
- 15 45. The composition of claim 40 wherein in said auxinic compound at least one of R_1 - R_5 is an alkyl group.
46. The composition of claim 45 wherein in said auxinic compound R_3 or R_5 is an alkyl group having from one to four carbon atoms and R_1 , R_2 , and R_4 are hydrogens.
47. The composition of claim 46 wherein said auxinic compound is 5-ethylindole-3-acetic acid, 7-ethylindole-3-acetic acid or salts, esters, or amides thereof.
- 20 48. The composition of claim 47 wherein said auxinic compound is 2-fluoroindole-3-acetic acid, 4-fluoroindole-3-acetic acid, 6-fluoroindole-3-acetic acid, 7-fluoroindole-3-acetic acid, 2-bromoindole-3-acetic acid, 4-bromoindole-3-acetic acid, 6-bromoindole-3-acetic acid, 7-bromoindole-3-acetic acid, 2-iodoindole-3-acetic acid, 4-iodoindole-3-acetic acid,

5-iodoindole-3-acetic acid, 6-iodoindole-3-acetic acid, 7-iodoindole-3-acetic acid or salts, esters or amides thereof.

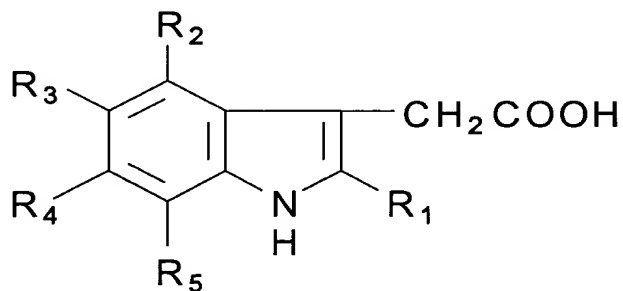
49. The composition of claim 40 wherein said auxinic compound is 2-iodoindole-3-acetic acid, 4-iodoindole-3-acetic acid, 5-iodoindole-3-acetic acid, 6-iodoindole-3-acetic acid, 7-iodoindole-3-acetic acid or salts, esters or amides thereof.

50. The composition of claim 40 wherein said auxinic compound is 6-bromoindole-3-acetic acid, 7-bromoindole-3-acetic acid or salts, esters or amides thereof.

51. The composition of claim 40 wherein said at least one of R_1 - R_5 is an acyl-group, an acyloxy-group, or an acylamido-group.

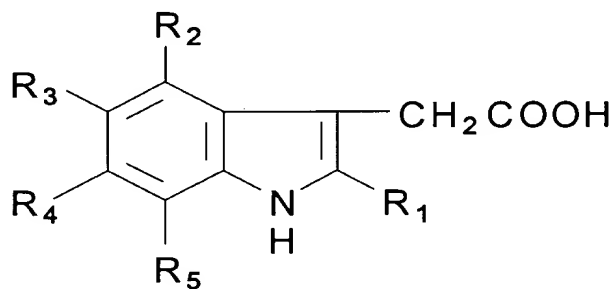
52. The composition of claim 40 further comprising a growth-affecting amount of a cytokinin.

53. An auxinic compound having the formula:



or salts, esters or amides thereof, wherein R_1 - R_5 are independently selected from the group consisting of a hydrogen, a halogen, an alkyl-group, an alkoxy-group, an acyl-group, an acyloxy-group, and an acylamido-group, and wherein at least one of R_1 - R_5 is an alkoxy-group, an acyl-group, an acyloxy-group or an acylamido-group with the exception that the compound is not 5-methoxyindole-3-acetic acid.

54. The compound of claim 53 wherein said alkyl-group, said alkoxy-group, said acyl-group, said acyloxy-group and said acylamido-group have 1-10 carbon atoms.
55. The compound of claim 54 wherein at least one of R_1 - R_5 is an acyl-group, an acyloxy-group or an acylamido-group.
56. An auxinic compound having the formula:



or salts, esters or amides thereof, wherein R_1 - R_5 are independently selected from the group consisting of a hydrogen, a fluorine, a bromine, an iodine, an alkyl group, an alkoxy-group, an acyl-group, an acyloxy-group, and an acylamido-group, wherein at least one of R_1 - R_5 is an alkoxy-group, an acyl-group, an acyloxy-group or an acylamido-group

and with the exception that the auxinic compound is not 5-bromoindole-3-acetic acid, 7-bromoindole-3-acetic acid, 5-fluoroindole-3-acetic acid, 2-methylindole-3-acetic acid, 5-methylindole-3-acetic acid, or 5-methoxyindole-3-acetic acid.

57. The auxinic compound of claim 56 which is 2-iodoindole-3-acetic acid, 4-iodoindole-3-acetic acid, 5-iodoindole-3-acetic acid, 6-iodoindole-3-acetic acid, 7-iodoindole-3-acetic acid or salts, esters, or amides thereof.
58. The auxinic compound of claim 56 which is 5-ethylindole-3-acetic acid, 7-ethylindole-3-acetic acid or salts, esters or amides thereof.
59. The auxinic compound of claim 56 wherein one of R_3 or R_5 is an ethyl group.
- 10 60. A method for generation of roots from a potato cell or tissue which comprises the step of contacting said potato cell or tissue with an amount of 7-ethyl indole-3-acetic acid effective for generation of roots.

added
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